PMC-ND

(1.08.09.13)

U.S. DEPARTMENT OF ENERGY
OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY
NEPA DETERMINATION

RECIPIENT: Purdue University **STATE:** IN

PROJECT TITLE: Modular River Current Energy Converter (MRCEC) with High-efficiency and Smart Operation

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002080	DE-EE0008950	GFO-0008950-001	

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Policy 451.1), I have made the following determination:

CX, EA, EIS APPENDIX AND NUMBER:

Description:

A9 Information gathering, analysis, and dissemination	Information gathering (including, but not limited to, literature surveys, inventories, site visits, and audits), data analysis (including, but not limited to, computer modeling), document preparation (including, but not limited to, conceptual design, feasibility studies, and analytical energy supply and demand studies), and information dissemination (including, but not limited to, document publication and distribution, and classroom training and informational programs), but not including site characterization or environmental monitoring. (See also B3.1 of appendix B to this subpart.)
B3.6 Small-scale research and development, laboratory operations, and pilot projects	Siting, construction, modification, operation, and decommissioning of facilities for smallscale research and development projects; conventional laboratory operations (such as preparation of chemical standards and sample analysis); and small-scale pilot projects (generally less than 2 years) frequently conducted to verify a concept before demonstration actions, provided that construction or modification would be within or contiguous to a previously disturbed or developed area (where active utilities and currently used roads are readily accessible). Not included in this category are demonstration actions, meaning actions that are undertaken at a scale to show whether a technology would be viable on a larger scale and suitable for commercial deployment.
B3.16 Research activities in aquatic environments	Small-scale, temporary surveying, site characterization, and research activities in aquatic environments, limited to: (a) Acquisition of rights-of-way, easements, and temporary use permits; (b) Installation, operation, and removal of passive scientific measurement devices, including, but not limited to, antennae, tide gauges, flow testing equipment for existing wells, weighted hydrophones, salinity measurement devices, and water quality measurement devices; (c) Natural resource inventories, data and sample collection, environmental monitoring, and basic and applied research, excluding (1) large-scale vibratory coring techniques and (2) seismic activities other than passive techniques; and (d) Surveying and mapping. These activities would be conducted in accordance with, where applicable, an approved spill prevention, control, and response plan and would incorporate appropriate control technologies and best management practices. None of the activities listed above would occur within the boundary of an established marine sanctuary or wildlife refuge, a governmentally proposed marine sanctuary or wildlife refuge, or a governmentally recognized area of high biological sensitivity, unless authorized by the agency responsible for such refuge, sanctuary, or area (or after consultation with the responsible agency, if no authorization is required). If the proposed activities would occur outside such refuge, sanctuary, or area and if the activities would have the potential to cause impacts within such refuge, sanctuary, or area, then the responsible agency shall be consulted in order to determine whether authorization is required and whether such activities would have the potential to cause significant impacts on such refuge, sanctuary, or area. Areas of high biological sensitivity include, but are not limited to, areas of known ecological importance, whale and marine mammal mating and calving/pupping areas, and fish and invertebrate spawning and nursery areas recognized as being limited or unique and vulnerable to perturbation; these areas can occur in bays, estuaries, near shore, and far offshore, and may vary seasonally. No permanent facilities or devices would be constructed or installed. Covered actions do not include drilling of resource exploration or extraction wells.

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide funding to Purdue University to develop a novel modular river current energy converter (MRCEC).

The project would be completed over two Budget Periods (BPs), with a Go/No-Go Decision Point in between each BP. BP2 work would be subject to a down-selection from DOE. These activities would be fully defined if Purdue University is selected for continuation into BP2. Accordingly, this NEPA review will be applicable only to BP1 activities. BP2 activities will be reviewed at a future date if and when follow-up information is provided regarding the scope of those activities.

BP1 would primarily focus on completing the preliminary design and analysis work to support fabrication and testing of the MRCEC in BP2. Proposed project activities during this BP would include conceptual design development, performance/operational simulations (i.e. computer modeling), commercialization planning/analysis, and research into the permits and authorizations that would be needed for BP2 field testing of the MRCEC device. BP1 would also include the performance of river surveys to identify site locations for field testing of the MRCEC device to be developed and performed in BP2 (site surveys discussed in detail below). No fabrication activities would be performed during this BP.

As part of BP1, site surveys would be conducted at three site locations on the Wabash River, in and around Lafayette, IN, in order to determine if the sites are appropriate for future in-water testing activities. Site surveys would utilize a remote-controlled survey boat measuring approximately 4 ft. in length. The survey boat would be transported to each site via ground transportation and would be deployed from the river banks. Surveying would be performed by trained personnel who would control the survey boat by using a remote control from the river bank or from a crew boat in the river, in cases in which the river is more than 500 ft. wide. The surveying area would run for approximately 300 ft. up the length of the river at each site location. The crew boat (i.e., an inflatable dinghy with a motor) would be launched from a river access point and would be piloted by two trained operators.

Surveying would take place during Spring – Fall 2020. Surveying would be performed weekly; with measurements taken for approximately one to two hours in the morning, afternoon, and evening, on testing days.

The survey boat would be equipped with echo sounders coupled with a global positioning system (GPS), as well as an Acoustic Doppler Current Profiler (ADCP). This instrumentation would be used to measure variables including river bathymetry, vertical velocity profiles, turbulence level, and diurnal and seasonal variations of the river flow. All instrumentation would remain on board the boat during site surveys and would not be deployed into the water.

The survey boat would be tethered to a cable system used to guide the ADCP system to different points on the river. The cable system would be set up using the crew boat described previously. The crew boat operators would deliver a throw line rope across the river to establish the cableway. The rope would be tied to ground anchors on each side of the river. The cable system would not be installed in-water and would remain above the river at all times. Red flags would be attached to the cable system in order to alert passersby to the presence of the cable system. The cable system would be removed after each day's survey.

The site locations where surveying would be performed include areas where a number of endangered species may occur. These consist of two (2) bat species and five (5) clam species . Considering the temporary nature of the surveying activities, and because all activities would be performed using a small, remote-controlled boat, and would not involve the deployment of instrumentation into the water depths, or disturb the riverbed or riverbank, DOE has determined that the proposed activities would have no effect on ESA listed species or critical habitats.

All project activities would be performed by Purdue University. Design work and analysis would be performed at existing office facilities at Purdue University's campus Lafayette, IN. Site surveys would be performed at specific in-water locations along the Wabash River in and around Lafayette, IN. No physical modifications to existing facilities, construction of new facilities, ground disturbing activities, or changes to the use, mission, or operation of existing facilities would be required for any of the above activities. No additional permits, licenses, or authorizations would be required.

No significant health and safety hazards are anticipated for design work/analysis, as this would all be performed in office-based settings. Site surveys would be performed adhering to established safety procedures. Protocols would include safety training for all personnel involved and the use of safety equipment, including life vests and life buoys. Surveys would be performed by at least two individuals.

NEPA PROVISION

DOE has made a conditional NEPA determination.

The NEPA Determination applies to the following Topic Areas, Budget Periods, and/or tasks:

Budget Period 1 - All Tasks

The NEPA Determination does not apply to the following Topic Area, Budget Periods, and/or tasks:

Budget Period 2 - All Tasks

Notes:

Water Power Technologies Office
This NEPA determination does not require a tailored NEPA provision.
Review completed by Jonathan Hartman, 03/10/2020

FOR CATEGORICAL EXCLUSION DETERMINATIONS

The proposed action (or the part of the proposal defined in the Rationale above) fits within a class of actions that is listed in Appendix A or B to 10 CFR Part 1021, Subpart D. To fit within the classes of actions listed in 10 CFR Part 1021, Subpart D, Appendix B, a proposal must be one that would not: (1) threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, or similar requirements of DOE or Executive Orders; (2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities (including incinerators), but the proposal may include categorically excluded waste storage, disposal, recovery, or treatment actions or facilities; (3) disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that preexist in the environment such that there would be uncontrolled or unpermitted releases; (4) have the potential to cause significant impacts on environmentally sensitive resources, including, but not limited to, those listed in paragraph B(4) of 10 CFR Part 1021, Subpart D, Appendix B; (5) involve genetically engineered organisms, synthetic biology, governmentally designated noxious weeds, or invasive species, unless the proposed activity would be contained or confined in a manner designed and operated to prevent unauthorized release into the environment and conducted in accordance with applicable requirements, such as those listed in paragraph B(5) of 10 CFR Part 1021, Subpart D, Appendix B.

There are no extraordinary circumstances related to the proposed action that may affect the significance of the environmental effects of the proposal.

The proposed action has not been segmented to meet the definition of a categorical exclusion. This proposal is not connected to other actions with potentially significant impacts (40 CFR 1508.25(a)(1)), is not related to other actions with individually insignificant but cumulatively significant impacts (40 CFR 1508.27(b)(7)), and is not precluded by 40 CFR 1506.1 or 10 CFR 1021.211 concerning limitations on actions during preparation of an environmental impact statement.

A portion of the proposed action is categorically excluded from further NEPA review. The NEPA Provision identifies Topic Areas, Budget Periods, tasks, and/or subtasks that are subject to additional NEPA review.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: Electronically Signed By: Roak Parker Date: 3/11/2020

NEPA Compliance Officer

FIELD OFFICE MANAGER DETERMINATION

- [x] Field Office Manager review not required
- [ ] Field Office Manager review required

BASED ON MY REVIEW I CONCUR WITH THE DETERMINATION OF THE NCO :

Field Office Manager's Signature: _____ Date: _____

Field Office Manager